# DEPARTMENT of ENVIRONMENTAL SERVICES Water Supply & Pollution Control Division - Biology Bureau

# LAKE TROPHIC DATA

#### MORPHOMETRIC:

Lake: PIONEE	R LAKE	Lake Area (ha):	21.04
Town:	STODDARD	Maximum depth (m):	3.3
County:		Mean depth (m):	1.6
River Basin:	Merrimack	Volume (m³):	343500
Latitude:		Relative depth:	0.6
Longitude:		Shore configuration:	1.31
Elevation (f	t): 1345	Areal water load (m/yr)	: 5.56
	(m): 2130	Flushing rate $(yr^{-1})$ :	3.40
Watershed ar		P retention coeff.:	0.64
% watershed	ponded: 0.0	Lake type: art	ificial

BIOLOGICAL:	21 January 1997	30 August 1996
DOM. PHYTOPLANKTON (% TOTAL) #1	SPARSE - NO DOMINANT	DINOBRYON 45%
#2		ANACYSTIS 25%
#3		
PHYTOPLANKTON ABUNDANCE (units/mL)		
CHLOROPHYLL-A (µg/L)		20.09
DOM. ZOOPLANKTON (% TOTAL) #1	ASPLANCHNA 54%	TRICHOCERCA 26%
#2	KERATELLA 18%	NAUPLIUS LARVA 14%
#3	CONOCHILOIDES 18%	POLYARTHRA 13%
ROTIFERS/LITER	35	917
MICROCRUSTACEA/LITER	1	367
ZOOPLANKTON ABUNDANCE (#/L)	39	1357
VASCULAR PLANT ABUNDANCE		Common/Abun
SECCHI DISK TRANSPARENCY (m)		1.7
BOTTOM DISSOLVED OXYGEN (mg/L)	2.9	6.2
BACTERIA (E. coli, #/100 ml) #1		< 10
#2		
#3		
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# SUMMER THERMAL STRATIFICATION:

# not stratified

Depth of thermocline (m): None Hypolimnion volume  $(m^3)$ : None Anoxic volume  $(m^3)$ : None

CHEMICAL:			PIONEER I STODDARD	AKE	
	21 January 1997		30 August 1996		96
DEPTH (m)	1.0	2.0	1.5		
pH (units)	5.3	5.2	5.7		
A.N.C. (Alkalinity)	2.8	2.3	1.6		
NITRATE NITROGEN	< 0.05	< 0.05	< 0.05		
TOTAL KJELDAHL NITROGEN	0.61	0.78	0.26		
TOTAL PHOSPHORUS	0.022	0.023	0.021		
CONDUCTIVITY (µmhos/cm)	22.1	20.8	17.8		
APPARENT COLOR (cpu)	38	38	35		
MAGNESIUM			0.28		
CALCIUM			1.2		
SODIUM			< 1.0		
POTASSIUM			< 0.40		
CHLORIDE	< 2	< 2	< 2		
SULFATE	3	3	3		
TN : TP	28	34	12		
CALCITE SATURATION INDEX			5.3		

All results in mg/L unless indicated otherwise

TROPHIC CLASSIFICATION: 1996

D.O.	S.D.	PLANT	CHL	TOTAL	CLASS
**	4	4	4	12	Eutro.

#### COMMENTS:

- 1. Pioneer Lake is a lightly tea-colored, moderately acidic, manmade eutrophic lake. Originally slated for development in the early 1980s, the pond and surrounding land now has a conservation easement and is part of several contiguous protected land parcels that create a wildlands preserve.
- 2. Access to this protected pond is controlled by two gates.
- 3. Water was cloudy, probably from suspended organic matter.
- 4. The abundant zooplankton counts demonstrate that the high primary productivity is carried up the food chain.
- 5. The pond consists of two shallow basins separated by an even shallower area dotted with small islands.

#### FIELD DATA SHEET

LAKE: PIONEER LAKE

DATE: 08/30/96

TOWN: STODDARD

WEATHER: SUNNY, WARM

DEPTH (M)	H TEMP (°C)	*DISSOLVED OXYGEN	OXYGEN SATURATION
0.:	1 22.1	7.0	80 %
1.0	0 22.0	6.9	78 %
2.0	0 21.8	6.6	73 %
3.0	0 21.2	6.2	69 %
		1 - 2 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	1.70

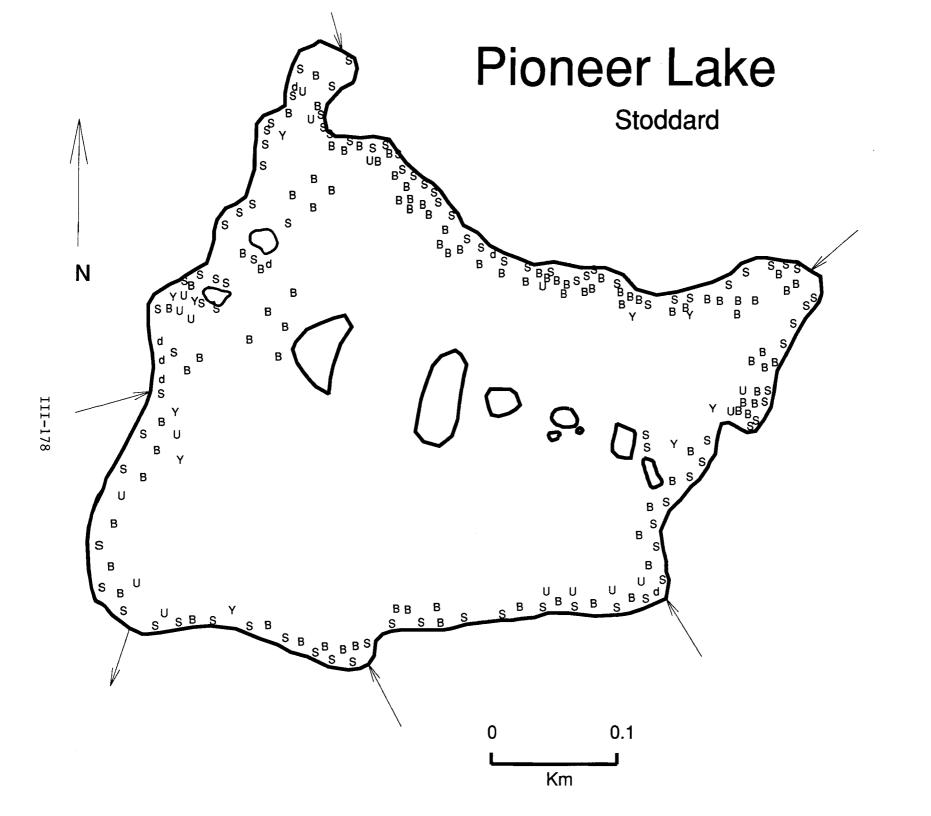
SECCHI DISK (m): 1.7

COMMENTS:

BOTTOM DEPTH (m): 3.2

TIME: 1130

\*Dissolved oxygen values are in mg/L



# AQUATIC PLANT SURVEY

LAK	E: PIONEER LAKE	TOWN: STODDARD	DATE: 08/30/9	
(A)	PI	ADUNDANCE		
Key	GENERIC	COMMON	ABUNDANCE	
S	Sparganium	Bur reed	Common	
В	Brasenia schreberi	Water shield	Common	
U	Utricularia	Bladderwort	Scattered	
Y	Nuphar	Yellow water lily	Scattered	
d	Dulichium arundinaceum	Three-way sedge	Scattered	

#### OVERALL ABUNDANCE: Common/Abun

# **GENERAL OBSERVATIONS:**

- 1. Poor water clarity made it difficult to observe submerged growth. Bladderwort was probably more abundant along the bottom than depicted on the map. Most of the visible bottom was covered with a dense moss-like growth.
- 2. Emergent/floating-leaf plants were common, but the dense bottom growth gives an overall rating of common/abundant.